

WHAT IS CLAIMED IS:

1. A moisture resistant composition, comprising:
less than 3 wt% of a low molecular weight hydrogenated aliphatic resin and between about 99.5 wt% and 95 wt% high density polyethylene, wherein the low molecular weight resin has a weight-average molecular weight of less than about 2000g/mol.
2. The composition of claim 1, wherein the composition comprises between about 0.5 wt % and 2.9 wt% of the low molecular weight hydrogenated aliphatic resin.
3. The composition of claim 1, wherein the composition comprises between about 0.5 wt % and 2.5 wt% of the low molecular weight hydrogenated aliphatic resin.
4. The composition of claim 1, wherein the low molecular weight hydrogenated aliphatic resin is the product of hydrogenating a polymer produced by polymerizing a reaction mixture comprising dicyclopentadiene.
5. The composition of claim 1, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly(dicyclopentadiene).
6. The composition of claim 1, wherein the low molecular weight hydrogenated aliphatic resin has a weight-average molecular weight of between about 50 g/mol and 2000 g/mol.
7. The composition of claim 1, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.
8. The composition of claim 7, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 75°C.

9. The composition of claim 8, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 80°C.

5 10. The composition of claim 1, wherein the high density polyethylene has a density of between about 0.940 and 0.966 g/cc.

10 11. The composition of claim 1, wherein the high density polyethylene has a density of between about 0.955 and 0.966 g/cc.

15 12. The composition of claim 1, wherein the high density polyethylene has a melt index of between about 0.1 and 100 dg/min.

20 13. The composition of claim 1, wherein the composition comprises at least about 100 ppm of at least one primary antioxidant.

25 14. The composition of claim 13, wherein the composition further comprises at least one secondary antioxidant.

30 15. The composition of claim 1, wherein the composition is incorporated in or coated onto a packaging article.

16. A method of preparing a moisture vapor resistant composition, comprising:
blending high density polyethylene with a low molecular weight hydrogenated aliphatic resin, wherein the blend comprises less than 3 wt% of the low molecular weight hydrogenated aliphatic resin and between about 99.5 wt% and 95 wt% high density polyethylene, wherein the low molecular weight resin has a weight-average molecular weight of less than about 2000 g/mol.

17. The method of claim 16, wherein the blend comprises between about 0.5 wt % and 2.9 wt% of the low molecular weight hydrogenated aliphatic resin.

18. The method of claim 16, wherein the composition comprises between about 0.5 wt % and 2.5 wt% of the low molecular weight hydrogenated aliphatic resin.

19. The method of claim 16, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly (dicyclopentadiene).

20. The method of claim 16, wherein the low molecular weight hydrogenated aliphatic resin has a weight-average molecular weight of between about 50 g/mol and 2000 g/mol.

21. The method of claim 16, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.

22. The method of claim 21, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 75°C.

23. The method of claim 22, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 80°C.

24. The method of claim 16, wherein the high density polyethylene has a density of between about 0.940 and 0.966 g/cc.

25. The method of claim 16, wherein the high density polyethylene has a density of between about 0.955 and 0.966 g/cc.

26. The method of claim 16, wherein the high density polyethylene has a melt index of between about 0.1 and 100 dg/min.

27. A packaging article, comprising:
at least one layer comprising less than 3 wt% of a low molecular weight hydrogenated aliphatic resin and between about 99.5 wt% and 95 wt% high density polyethylene, wherein

the low molecular weight resin has a weight-average molecular weight of less than about 2000 g/mol.

28. The packaging article of claim 27, wherein the layer comprises between about 0.5 wt % and 2.9 wt% of the low molecular weight hydrogenated aliphatic resin.

29. The packaging article of claim 27, wherein the layer comprises between about 0.5 wt % and 2.5 wt% of the low molecular weight hydrogenated aliphatic resin.

10 30. The packaging article of claim 27, wherein the low molecular weight hydrogenated aliphatic resin is the product of hydrogenating a polymer produced by polymerizing a reaction mixture comprising dicyclopentadiene.

31. The packaging article of claim 27, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly (dicyclopentadiene).

32. The packaging article of claim 27, wherein the low molecular weight hydrogenated aliphatic resin has a weight-average molecular weight of between about 50 g/mol and 2000 g/mol.

33. The packaging article of claim 27, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.

25 34. The packaging article of claim 33, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 75°C.

35. The packaging article of claim 34, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 80°C.

30 36. The packaging article of claim 27, wherein the high density polyethylene has a density of between about 0.940 and 0.966 g/cc.

37. The packaging article of claim 27, wherein the high density polyethylene has a density of between about 0.955 and 0.966 g/cc.

5 38. The packaging article of claim 27, wherein the high density polyethylene has a melt index of between about 0.1 and 100 dg/min.

39. The packaging article of claim 27, wherein the layer comprises at least about 100 ppm of at least one primary antioxidant.

10 40. The packaging article of claim 39, wherein the layer further comprises at least one secondary antioxidant.

41. The packaging article of claim 27, wherein the article is a film.

42. The packaging article of claim 41, wherein the film is a cast film.

43. The packaging article of claim 41, wherein the film is a blown film.

44. The packaging article of claim 27, wherein the layer is a coating or a laminate.

20 45. The packaging article of claim 27, wherein the article is prepared using blow molding or injection molding.

25 46. The packaging article of claim 43, wherein the composition has a normalized MVTR of less than about below 0.35 g•mil/100 in²/day.

47. The packaging article of claim 41, wherein the film is a post oriented film.

30 48. The packaging article of claim 47, wherein the film is a biaxially oriented film.

49. A moisture resistant composition, comprising:

between about 0.5 and 25 wt% of a low molecular weight hydrogenated aliphatic resin and between about 99.5 wt% and 75 wt% of a branched or linear low density polyethylene, wherein the low molecular weight resin has a molecular weight of less than about and the branched or linear low density polyethylene has a density of less than about 0.940 g/cm³.

50. The composition of claim 49, wherein the branched or linear low density polyethylene has a density of between about 0.910 and 0.925 g/cm³.

10 51. The composition of claim 49, wherein the low molecular weight hydrogenated aliphatic resin is the product of hydrogenating a polymer produced by polymerizing a reaction mixture comprising dicyclopentadiene.

52. The composition of claim 49, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly (dicyclopentadiene).

53. The composition of claim 49, wherein the low molecular weight hydrogenated aliphatic resin has a molecular weight of between about.

20 54. The composition of claim 49, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.

25 55. A moisture resistant composition, comprising:

between about 0.5 and 25 wt% of a low molecular weight hydrogenated aliphatic resin,

between about 8 and 30 wt% of a low molecular weight high density polyethylene, and

30 between about 45 and 92.5 wt% of a second high density polyethylene, wherein the low molecular weight resin has a weight-average molecular weight of less than about 2000 g/mol, and the low molecular weight high density polyethylene has a zero-shear

viscosity that is less than or equal to 0.9 times the zero-shear viscosity of the second high density polyethylene.

5 56. The composition of claim 55, wherein the second high density polyethylene has a melt index of between about 0.1 dg/min and 100 dg/min

10 57. The composition of claim 55, wherein the second high density polyethylene is essentially the only other component in the composition besides the low molecular weight hydrogenated aliphatic resin and the low molecular weight high density polyethylene.

58. The composition of claim 55, wherein the low molecular weight hydrogenated aliphatic resin is the product of hydrogenating a polymer produced by polymerizing a reaction mixture comprising dicyclopentadiene.

59. The composition of claim 55, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly(dicyclopentadiene).

60. The composition of claim 55, wherein the low molecular weight hydrogenated aliphatic resin has a weight-average molecular weight of between about 50 g/mol and 2000 g/mol.

61. The composition of claim 55, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.

25 62. The composition of claim 55, wherein the second high density polyethylene has a density of between about 0.940 and 0.966 g/cc.

63. A moisture resistant composition, comprising:
30 between about 0.5 and 4 wt% of a low molecular weight hydrogenated aliphatic resin,
between about 1 and 30 wt% of a low molecular weight high density polyethylene, and
between about 66 and 98.5 wt% of a second high density polyethylene,

wherein the low molecular weight resin has a weight-average molecular weight of less than about 2000 g/mol, and the low molecular weight high density polyethylene has a zero-shear viscosity that is less than or equal to 0.9 times the zero-shear viscosity of the second high density polyethylene.

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64. The composition of claim 63, wherein the second high density polyethylene has a melt index of between about 0.1 dg/min and 100 dg/min.

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65. The composition of claim 63, wherein the second high density polyethylene is essentially the only other component in the composition besides the low molecular weight hydrogenated aliphatic resin and the low molecular weight high density polyethylene.

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66. The composition of claim 63, wherein the composition comprises between about 0.5 and 3.5 wt% of the low molecular weight hydrogenated aliphatic resin.

67. The composition of claim 66, wherein the second high density polyethylene is essentially the only other component in the composition besides the low molecular weight hydrogenated aliphatic resin and the low molecular weight high density polyethylene.

68. The composition of claim 63, wherein the low molecular weight hydrogenated aliphatic resin is the product of hydrogenating a polymer produced by polymerizing a reaction mixture comprising dicyclopentadiene.

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69. The composition of claim 63, wherein the low molecular weight hydrogenated aliphatic resin comprises hydrogenated poly(dicyclopentadiene).

70. The composition of claim 63, wherein the low molecular weight hydrogenated aliphatic resin has a weight-average molecular weight of between about 50 g/mol and 2000 g/mol .

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71. The composition of claim 63, wherein the low molecular weight hydrogenated aliphatic resin has a glass transition temperature greater than about 50°C.

5 72. The composition of claim 63, wherein the second high density polyethylene has a density of between about 0.940 and 0.966 g/cc.

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